

10/051,417

Remarks Relative to Amendments

Please amend Claim 11, line 9, to delete the second "to".

Claim 27, line 18 is amended to add a space between "or an."

Claim 31, line 5 is amended to correct the word "epoxy."

These amendments are provided to correct obvious typographical errors.

Claims 26, 28 and 30 are amended to delete the phrase "or in tensile mode according to ASTM D638 type 4." This amendment is made to indicate that the adhesive used according to Claims 26, 28 and 30 demonstrates a cohesive strength of 250 psi or greater when measured in a lap shear mode only.

This amendment is in response to the arguments presented by the Examiner in the Final Rejection, and entry is proper in that the amendment simply deletes subject matter from the claims and places the claims in condition for allowance or in better condition for appeal should appeal be necessary.

44563A

-2-

10/051,417

35 USC§103 Rejection 1

Claims 1-3, 11, 18-21 and 26-32 are rejected under 35 USC§103(a) as being obvious in view of the teachings of Mochizuki et al. (U.S. Patent 4,985,523), hereinafter Mochizuki. Applicants traverse this rejection for the reasons stated hereinafter and respectfully request withdrawal of the rejection.

Arguments 35 USC §103 Rejection 1

Mochizuki does not teach a valve cover assembly which comprises a valve cover wherein there is an adhesive disposed on the perimeter of the mating surface, which adhesive has sufficient adhesive strength to hold the valve cover in place during normal operating conditions. Such an adhesive having such properties is commonly referred to as a structural adhesive because it bonds structural parts of an automobile together. Mochizuki does not teach an engine assembly in which the valve cover(s) is bonded to cylinder head(s) using an adhesive which has sufficient cohesive strength to hold the valve cover in place during normal operating conditions; a process for affixing valve cover (s) to cylinder head(s) using such an adhesive or a valve cover assembly which does not have bolt holes which have a primary function of holding the valve cover to the cylinder head. Furthermore, the reference does not teach a valve cover assembly, an engine cover assembly or a method as discussed hereinbefore wherein the adhesive demonstrates a cohesive strength of 250 psi or greater when measured in a lap shear mode. Mochizuki provides no guidance to one skilled in the art as to how to assemble valve covers to cylinder heads, without the need for bolts and bolt holes, to hold it in place.

Mochizuki relates to the problem of sealing between two parts of an automobile and discloses a composition used to perform such sealing. As used in Mochizuki, the sealing function refers to preventing leaks in the sealed area, not to holding the sealed parts together. Mochizuki discloses sealing of joints of automobile engines, see col. 1, line 16-20. The reference does not discuss how to permanently affix valve cover(s) to a cylinder head(s). At col. 1, lines 50-53, the patentee makes it clear that the reference deals with the problem of improving the seal between parts of an automobile. Further, Mochizuki makes it clear that releasability of the sealant prepared is an important feature. See col. 4, lines 5-6, see col. 4, lines 54-57, see col.

44563A

-3-

10/051,417

7, lines 20-29 and 43-49 and col. 13, lines 17-22. See particular, col. 3, lines 19-22, which states: "Such releasability can be taken advantage of when the sealant composition is utilized as, for example, a liquid gasket because it can be easily removed for exchange of parts." This indicates that the adhesives disclosed in Mochizuki are not designed to form strong structural bonds between an adhesive and a substrate. The compositions disclosed in Mochizuki are primarily designed to prepare to develop better sealing materials. Adhesion is advantageous to enhance the sealing characteristics of the sealant, but the teachings referred to earlier disclose that releasability is important, making it clear that the adhesive bond is to be a weak bond rather than a bond sufficient to hold a valve cover in place on a cylinder head during normal operations.

The Official Action points out that Mochizuki shows that the materials disclosed in the invention have a tensile strength of about 140 to about 569. Tensile strength is a measure of the internal cohesive strength of a material and is measured by stretching a dog-bone shaped piece of the plastic in an apparatus and measuring the pressure applied at breaking of the specimen. This test has nothing to do with the adhesive strength of a material. See ASTM D638-02 enclosed herewith. In order for a material to have sufficient strength to hold a valve cover in place during normal operation, that adhesive must have sufficient adhesive strength to hold the valve cover on. An adhesive is tested for its adhesive strength by performing a lap shear according to ASTM D3165-00. Mochizuki does not teach or suggest bonding a valve cover to a cylinder head, and further does not disclose what is a suitable adhesive or an acceptable lap shear strength for bonding a valve cover to a cylinder head. A lap shear test measures the adhesive strength of the bond to a substrate. There is nothing in Mochizuki which refers to this property or the importance of this property, nor is there any disclosure of using an adhesive to bond a valve cover to a cylinder head or to bond any parts together. Therefore, Mochizuki does not teach or suggest this invention.

The materials disclosed in Mochizuki are used to seal a valve cover to a cylinder head, such materials would exhibit insufficient adhesive strength to the substrate to hold the valve cover in place during normal operation. This is made very clear by the several references in Mochizuki to the importance of releasability of the

44563A

-4-

10/051,417

sealant from the substrate so as to allow easy removal of a sealant. As a result of the amendments to Claims 26, 28 and 30, these claims require that the adhesive used have a lap shear strength of 250 psi, thus specifying an acceptable adhesive strength. Using an adhesive with such adhesive strength according to ASTM D3164-92 is not disclosed in Mochizuki. In view of this discussion, it is very clear that the teachings of Mochizuki do not establish a *prima facie* of obviousness, and this rejection must be withdrawn.

#### 35 USC §103 Rejections 2 to 5

Claims 4-7, 12-14 and 22-23 are rejected as being unpatentable over Mochizuki in view of Santella (U.S. Patent 5,375,569), hereinafter Santella. Applicants traverse these rejections for the reasons stated hereinafter and respectfully request withdrawal of the rejection.

#### Argument 35 USC §103 Rejections 2 to 5

Santella represents the state of the art in assembling valve covers to cylinder heads, in that it discloses that it is necessary to bolt the valve cover to a cylinder head, see Figure 1 and Figure 2, Reference No. 18. Santella discloses that the valve cover and cylinder head interface requires the presence of a sealant, see Figures 1(a) and 2(a), Reference No. 16. This sealant is the kind of material which is disclosed in Mochizuki. What Santella does not teach is a valve cover assembly, engine assembly or method of bonding a valve cover to an engine wherein an adhesive is used which has sufficient strength to hold the valve cover in place during normal operations. That is simply, Santella does not disclose the use of the structural adhesive to bond a valve cover to a cylinder head. Further, neither reference discloses using an adhesive which has a cohesive strength according to a lap shear test of 250 psi or greater, or that a valve cover can be affixed to a cylinder head without the need of bolts and bolt holes.

The reference to a tensile strength of up to 569 psi or greater in Mochizuki refers to the cohesive strength and not the adhesive strength. Therefore, there is no teaching in either of the references which would suggest using an adhesive having such adhesive strength. Furthermore, the two references would teach one skilled in the art away from Applicants' invention. Santella teaches that bolt and bolt

44563A

-5-

10/051,417

holes are necessary to affix a valve cover to a valve cover or cylinder head and Mochizuki teaches compositions which have good releasability from substrates which is the antithesis of good adhesion to a substrate. The materials taught and favored by Mochizuki would clearly not have sufficient adhesive strength or cohesive strength according to a lap shear method. Therefore, for these reasons, this rejection must be withdrawn.

Conclusion

Applicants respectfully request entry of the proposed amendments, reconsideration of the claims in view of the amendments and remarks provided hereinbefore and solicit allowance of Claims 1-7, 11-14, 18-23 and 26-32.

Respectfully submitted,



Norman L. Sims  
Registration No. 30,685  
Phone: 248/391-6455

P. O. Box 1967  
Midland, MI 48641-1967

NLS:mfm

44563A

-6-